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Letter to the Editor

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Alfredo Maldonado-Barrueco
David Grandioso-Vas
Mario Ruiz-Bastián
Juana Cacho-Calvo
Carlos Toro
Inmaculada Quiles-Melero

Mycobacterium abscessus subsp. *massilliense* causing bartholinitis infection: A case report

Clinical Microbiology Department. Hospital University La Paz. Madrid, Spain

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Sir,

A 27-year-old immunocompetent female from Madrid (Spain) came to the Gynecological Emergency Department (GED) in February 2022 due to the presence of an abscess in the left major labia of the vagina after ten days of evolution without previous antimicrobial treatment. Previous relevant medical events included a mammoplasty and liposculpture some years ago. Seventeen days previously, the patient had undergone a vaginal mesotherapy session in an aesthetic clinic. This procedure involves the use of subcutaneous needles in order to inoculate substances that promote tissue regeneration. On physical examination, the patient presented an edematous abscess of approximately 7 centimeters in diameter, painful on palpation, warm, erythematous, and fluctuant with no spontaneous drainage point. The clinical picture was compatible with complicated abscessed folliculitis. The patient was diagnosed with a Bartholin gland cyst and cellulitis in her right major labia. Blood examinations did not show any relevant data, only a discreet elevation of leukocytes of 9,220 (reference range 4,800–15,000) cells/mm^3, neutrophil (68%), and a low increase of protein-C-reactive of 14.9 (reference range <1–0.5) mg/dL. At the moment in GED, the patient underwent drainage of the abscess through an incision of 1 cm in diameter with the marsupialization of the Bartholin gland because of drain of approximately 15 mL of purulent material. The patient was discharged with a 300mg/12h clindamycin prescription for seven days until a follow-up visit for suspected *Staphylococcus aureus* infection. The abscess was cultured on blood and chocolate agar (Becton Dickinson, New Jersey, USA) incubated for five days in aerobic conditions at 37°C and 5% CO_2 atmosphere. Moreover, thioglycolate medium (Becton Dickinson) was incubated in aerobic conditions at 37°C.

Correspondence:
Alfredo Maldonado-Barrueco.
Clinical Microbiology Department. Hospital Universitario La Paz. IdiPAZ. Paseo de La Castellana 261, 28046, Madrid, Spain
E-mail: alfredo.maldonado@salud.madrid.org.

The direct sample gram stain did not reveal any structure resembling microorganisms, but showed the presence of leukocytes. However, in the blood agar medium growth of small, dry, and white colonies were observed after 72 hours of incubation. Due to the appearance of colonies, we performed an auramine stain because of higher sensitivity. To confirm the auramine stain results, Ziehl-Neelsen stain from the blood agar colonies was also performed. Both stains were positive for acid-fast rods. Seven days later the patient had to return for a switch of treatment due to the presence of left inguinal adenopathies and microbiological findings.

The dry and white colonies were identified as *Mycobacterium abscessus* subspecies using Matrix Assisted Laser Desorption/Ionization-Mass Spectrometry (MALDI-TOF MS Bruker, Massachusetts, USA) following the protocol proposed by Alcolea-Medina *et. al* [1]. To confirm the result, PCR Genotype Mycobacterium CM v.2.0 (Hain Lifesciencie GmbH, Nehren, Germany) was performed from the isolate. *M. abscessus* subsp. *massilliense* was identified using the PCR Genotype Mycobacterium NTM-DR v.1.0 kit (Hain Lifesciencie GmbH) without detection of mutations related to macrolide or aminoglycoside resistance.

The analysis of antibiotic susceptibility for *M. abscessus* subsp. *massilliense* was performed using the Epsilon-test method (ETEST, BioMérieux®, Marcy-l´Étoile, France) showed resistance to imipenem (>32 mg/L) and linezolid (>256 mg/L), but susceptible to clarithromycin (0.25 mg/L) and amikacin (16 mg/L) using the ECOFF EUCAST breakpoints [2].

Cutaneous mycobacterial infections show clinical presentations, such us cellulitis, nonhealing ulcers, subacute or chronic nodular lesions, abscesses, superficial lymphadenitis, or verrucous lesions [3]. These infections include a group of three diseases categories: cutaneous infections causing by *M. tuberculosis* subspecies, leprosy disease caused by *M. leprae* or *M. lepromatosis*, and cutaneous infections produced by non-tuberculosis mycobacteria (NTM) including rapidly and slow growing mycobacteria [3].

The cutaneous NTM infections are related to invasive surgical or medical-aesthetic procedures such as acupuncture, tattoos, plastic surgery, piercings, pedicure sessions, mesotherapy (as our case reported), surgeries, and in processes including the trauma of the skin [3,4]. *M. abscessus* subspecies first identified in a patient with a knee infection and subcutaneous abscesses in 1950 [5]. *M. abscessus* subspecies pathogens are considered saprophytes and can be found in water, soil, organic matter, or vegetables being the environment the main source of infection. However, *M. abscessus* subspecies have been implicated as causal agents of wound and soft tissue infections, especially in immunocompromised patients such as HIV-patients, organ transplants, cancer or patients undergoing treatment with biological drugs [6]. We report, as our knowledge, the first bartholinitis causing by *M. abscessus* subsp. *massilliense* using the terms *"Mycobacterium*", "*abscessus*", and *"bartholinitis"* on PubMed or Medline database.

Mycobacterium/Mycobacteroides abscessus subspecies includes by sequencing *M. abscessus* subsp. *abscessus*, *M. abscessus* subsp. *massilliense*, and *M. abscessus* subsp. *bolletii*. *M. abscessus* subsp. *abscessus* is more frequently isolated in respiratory samples [7]. However, *M. abscessus* subsp. *massilliense* is more common in soft-tissue infections [8]. In contrast to the slow growing NTM, rapidly growing NTM such as *M. abscessus* subspecies can be grown in conventional media such us blood or chocolate agar in 3-5 days of incubation, Löwenstein-Jensen medium or Bactec mycobacterial growth indicator MGIT 960 system (BD Diagnostic Systems, Sparks, MD) [5]. However, cutaneous abscesses should be cultured at 30ºC and 37ºC for differential diagnoses with another NTM such as *Mycobacterium marinum,* among others [3].

M. abscessus subspecies are intrinsic resistant to anti-tuberculosis treatment such as rifampicin, isoniazid, ethambutol, and pyrazinamide. The presence of lipid-rich cell envelope forms an important barrier to antibiotic penetration with the presence of efflux transmembrane proteins [8]. The subspecies identification of *M. abscessus* is necessary to anticipate the macrolide antimicrobial resistance [8]. *M. abscessus* subsp. *abscessus* and *M. abscessus* subsp. *bolletii* present a functional inducible erythromycin ribosome methyltransferase *erm (41)* generating a macrolide-resistant phenotype acting at the adenine at position 2058 (A2058) of the 23S rRNA [9,10]. However, *M. abscessus* subsp. *massilliense* presents a non-functional *erm (41)* gene with two deletions making clarithromycin a useful drug for the treatment of this subspecies [11]. The genotypic analysis performed in our laboratory confirmed the susceptibility to macrolides. Moreover, the phenotypic analysis using gradient diffusion showed *in vitro* susceptibility to clarithromycin. However, phenotypic analysis using other methods than broth microdilution can shows low reproducibility and low *"in vitro"* and *"in vivo"* correlation [10]. In the second visit, the treatment of the patient was switched, according to the susceptibility, to oral clarithromycin 500 mg/12h for six months and IV amikacin. *M. abscessus* infections should be treated with at least two or three antibiotics due to the *M. abscessus* subspecies multidrug resistance. Unfortunately, the patient did not return to the gynecology department for follow-up and we have no information on the success of the *M. abscessus* treatment.

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None to declare

CONFLICTS OF INTEREST

The authors declare no conflicts of interest

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